CAI-2006-34

UNITED STATES
DEPARTMENT OF LABOR
MINE SAFETY AND HEALTH ADMINISTRATION

COAL MINE SAFETY AND HEALTH

REPORT OF INVESTIGATION

Surface Mine Facility

Fatal Machinery Accident
July 7, 2006

General Mine Contracting, Inc. (BSI)
Henderson, KY

at

East Volunteer
Hopkins County Coal, LLC
Madisonville, Hopkins County, KY
ID No. 15-02013

Accident Investigators

Alice Perry
Mining Engineer
Mine Safety and Health Inspector

Phillip McCabe
Mechanical Engineer
MSHA Approval and Certification Center

Originating Office
Mine Safety and Health Administration
District 10
100 YMCA Drive
Madisonville, KY, 42431-9010
Carl E. Boone II, District Manager

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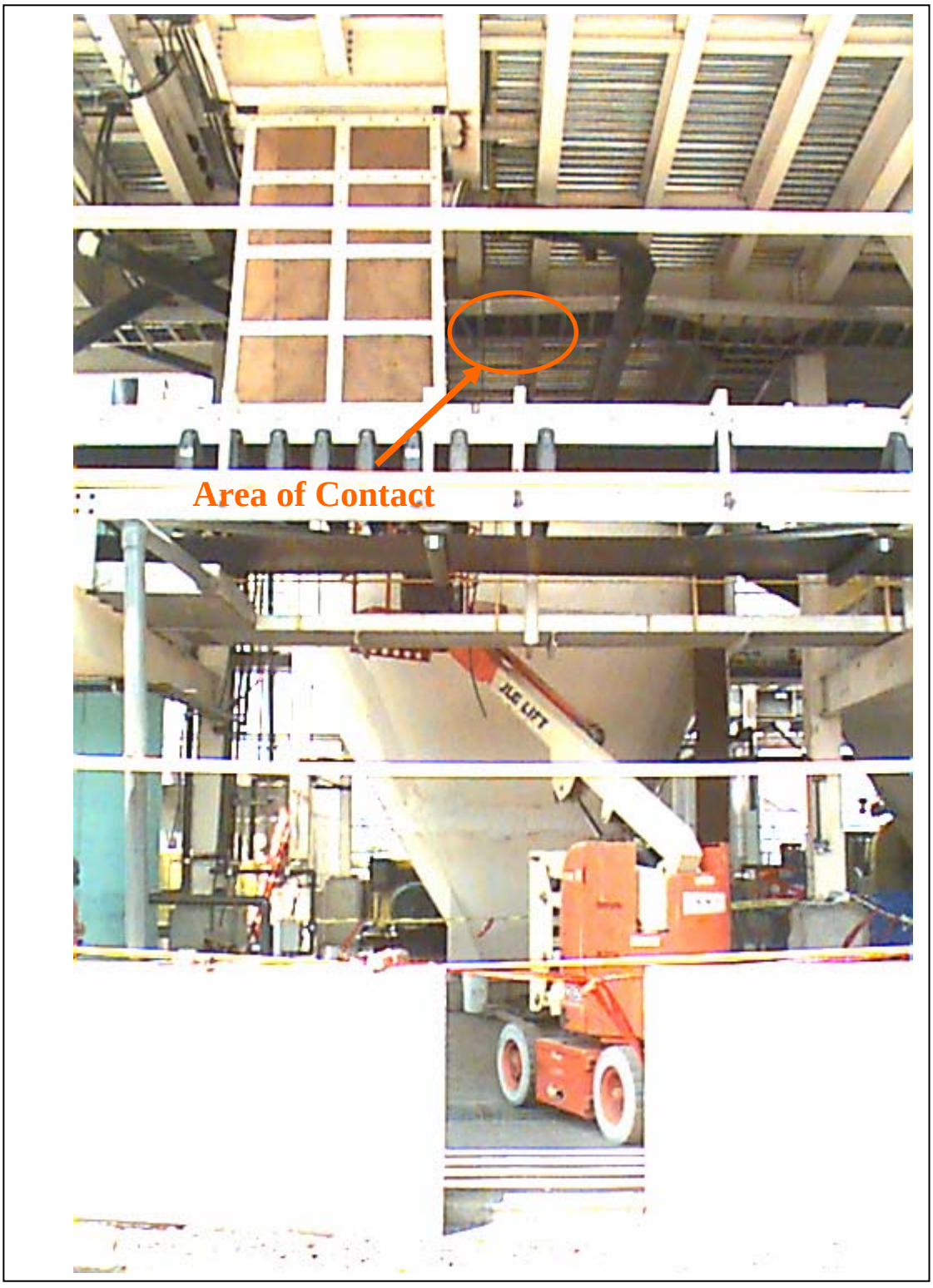
ACCIDENT SITE



OVERVIEW

At 8:05 a.m. on Friday, July 7, 2006, a 35-year old Millwright with 3 years of mining experience was fatally injured while operating a JLG Lift, Model E300A. The accident occurred while Edward R. Fitzgerrel, victim, was repositioning the platform of the Lift beneath the second floor of the preparation plant. Fitzgerrel was caught between a metal cable tray and the handrail over the platform control panel resulting in fatal injuries. He was employed by General Mine Contracting, Inc. (GMC), a construction contractor on a new coal preparation plant for Hopkins County Coal (HCC), LLC's East Volunteer.

At the time of the accident, the JLG Lift was not being maintained in a safe operating condition. The main telescoping toggle switch located on the platform control panel was defective in that unintentional movement of the main boom telescope function intermittently occurs.

GENERAL INFORMATION

East Volunteer is a preparation facility operated by HCC, LLC. It is located two miles southeast of Madisonville, Hopkins County, Kentucky. At the time of the accident, the new East Volunteer preparation facility was in its final stages of construction. The old preparation plant was shutdown and scheduled for demolition. The facility utilizes 15 of its own surface miners as well as three construction contractors. The three construction contracting companies are: GMC, William E. Groves Construction, Inc. (Groves), and JEM Sales & Service, Inc., (JEM)

At the time of the accident the new preparation plant construction work schedule was six days a week, which included four ten hour and two eight hour shifts. GMC employees were off Monday and Tuesday before the accident for the Fourth of July holiday.

The principal officers for GMC at the time of the accident were:

Barry G. Slaton .....President
Terry L. Greaves ..... Vice President

The principal officers for the mine at the time of the accident were:

William C. Adelman .....General Manager
Luther D. Furgerson.....Safety Director
David Threlkeld .....Preparation Plant Superintendent

The principal officers for the Corporate Office at the time of the accident were:

Joseph W Craft III.....President & CEO
Thomas L Pearson.....Senior Vice President of Law & Administration Secretary
Charles R Wesley, III.....Senior Vice President of Operations
Gary J Rathburn .....Senior Vice President of Marketing
Dale G Wilkerson ..... Vice President of Controller & Assistant Secretary

A regular safety and health inspection was in progress at the time of the accident by the Mine Safety and Health Administration (MSHA). The Non-Fatal Days Lost (NFDL) injury incidence rate for the mine in 2005 was 1.29 compared to a National NFDL rate of 1.88.

DESCRIPTION OF ACCIDENT

At 7:00 a.m. on Friday, July 7, 2006, Hopkins County Coal, LLC, employees along with employees from GMC, William E. Groves Construction, Inc., and JEM Sales & Service, Inc. were working to complete the new preparation plant. Terry Greaves, GMC Vice President, gave assignments to his employees, and then proceeded to make his rounds of the plant. Edward Fitzgerrel, victim, was assigned the task of installing four inch floor drains. James M. Lamb (GMC Laborer) was informed that he would be rotating between Fitzgerrel and Zacheriah Hust (GMC Pipe Fitter).

Shortly after the shift started, Fitzgerrel prepared a section of four inch Schedule 40 polypropylene pipe by attaching a rubber boot and a 90 degree elbow. The section of pipe was being prepared to attach to the floor drain located underneath the second floor structure. Lamb assisted Fitzgerrel by positioning the aerial lift beneath the floor drain. Lamb then left Fitzgerrel to paint in the thickener.

Ricky Dockery (HCC Construction worker/Truck Driver), while escorting two visitors through the plant, observed Fitzgerrel operating the aerial lift at a slow rate of speed approximately eight feet off the floor. As the two visitors were escorted back through the plant Fitzgerrel and Dockery exchanged waves.

Bradley Scales (GMC Supervisor) was the first person to arrive at the accident scene. As he was walking through the plant he saw Fitzgerrel's hard hat fall to the floor. He was unable to see the platform of the lift since he was approximately 16 feet away, so he shouted, "Is everyone alright" but never received an answer. He then ran forward and saw that Fitzgerrel was caught between the handrail over the platform control panel and a metal cable tray. Scales immediately began calling for help.

Dockery was near the west opening of the plant when he heard a crash and saw Scales, running. Dockery went to Scales and observed Fitzgerrel caught. He then immediately went to the catwalk on the second floor where he met Robert Crume (Groves Crew Foreman/Electrician) and Cory Hammers (Groves Electrician Helper), who had responded from the northeast end of the plant.

Greaves, Bryan Qualls (Groves Electrician), Blake Todd (Groves Electrician Helper) and David Threlkeld (HCC Preparation Plant Superintendent) were on the plant's second floor on the south end. They heard, "Man hurt!" All responded to the accident scene on the first floor and Threlkeld immediately dialed 911 at 8:06 a.m.

Scales unsuccessfully attempted to lower the platform by operating the ground control station. Qualls also tried to operate the platform from the ground control station but was unsuccessful, so he went to get another aerial lift. Crume got inside the platform and removed Fitzgerrel's foot from the footswitch. Crume reset the footswitch and lowered the platform to the first floor. He then attempted to open the gate but a decision was made to use a cutting torch to remove the gate.

Tim Steele, HCC Preparation Plant Operator, sent for the Mine Emergency Technician (MET) kits. When Fitzgerrel was lowered to the first floor, Steele and Dockery were unable to detect any vital signs. Meanwhile, Rodney Herndon (HCC Construction/Dozer Operator) used a cutting torch to remove the gate from the platform. He also assisted in transferring Fitzgerrel onto a stretcher.

Dennis Strange (GMC Welder/Ironworker and former EMT) performed CPR along with Dockery and Steel until the ambulance service arrived. Fitzgerrel was taken to the Madisonville Regional Medical Center where he was pronounced dead at 8:49 a.m.

INVESTIGATION OF THE ACCIDENT

On July 7, 2006, Abel De Leon, MSHA inspector, was at the nearby Elk Creek Mine and was immediately notified of the accident by David Furgerson, Safety Director of both Elk Creek Mine and East Volunteer. Carl E. Boone II, MSHA District Manager, was also notified of the accident by Matt Pride, Superintendent of Elk Creek Mine at approximately 8:20 a.m. A 103(k) Order was issued to ensure the safety of all persons at the facility until an investigation could be conducted by MSHA to determine the cause and means to prevent a similar occurrence.

MSHA's accident investigation team traveled to the mine; conducted a physical examination of the accident scene, examined the equipment involved, interviewed 14 persons and reviewed conditions and procedures relative to the accident. The investigation was conducted jointly with the Kentucky Office of Mine Safety and Licensing, and with the assistance of mine management, and miners. A mechanical engineer from Mechanical and Engineering Safety Division, Approval and Certification Center, arrived on July 10, 2006, to conduct a detailed mechanical evaluation of the JLG model E300A Lift.

DISCUSSION

GENERAL MACHINE INFORMATION:

This lift was a model E300A manufactured by JLG Industries of McConnellsburg, Pennsylvania. Hopkins County Coal, LLC was renting the lift from Levee Lift, Inc. of Evansville, Indiana. GMC employees were using the lift at the preparation plant construction site.

PHYSICAL FACTORS:

The battery powered JLG manlift had a rigid frame with a 360 degree non-continuous rotating turntable. The manlift is rated for a 500 pound capacity at a 30 feet maximum extension. The manlift had non-steering powered front wheels and non-powered steering rear wheels. The wheels had solid rubber tires suitable for improved surfaces on all four wheels. The rotating turntable had multiple components to control the position of the manlift platform. The illustration in Appendix B shows the machine components configured in the most extended condition.

The machine was battery powered and controlled by electrical switches and control levers. The batteries supplied power to a electric motor located on the turntable. This electric motor was used to drive a hydraulic pump. The hydraulic flow and pressure from this pump was fed to various electric-over-hydraulic control valves and into the various hydraulic components, primarily the lifting cylinders.

The machine had two operator control stations, a ground control station, located on the turntable, and a platform control station located in the platform. The illustrations in Appendix C and Appendix D shows the functions of the control switches and levers used to operate the machine. The illustrations will be used as reference in the following paragraphs which will describe the function and testing of the various controls.

VISUAL INSPECTION OF MACHINE:

After the accident, the platform of the machine was lowered to the ground. This was the position of the platform at the time of this investigation. The machine was visually inspected to determine the condition of the machine and to note any apparent physical damage. No defects were found in the rigid frame, boom sections or turntable. The platform structure did have some minor dents and bends to the upper handrails and lower kickboard. The platform entrance gate had been removed during the recovery of the victim. There were no other defects visually detected at this time. The control stations were legibly marked with the appropriate labels.

OPERATIONAL CHECKS OF MACHINE:

The machine was operated to determine if the controls would function properly. For reference, the batteries had approximately ¾ charge, as indicated by the LED Battery Indicator located at the ground control station, at the time of this operational testing. The Function Speed selector located on the platform control station was set to the "fast" function speed position. Reportedly, the speed function was in the "fast" position at the time of the accident.

Ground Control Station Testing:

The Platform/Ground Select Switch was set to the ground control position. In this position, the upper or platform controls are completely electrically disabled. All control switches were activated, including the emergency stop function during each machine movement. As the controls were activated and released the machine movements would start and stop smoothly. No operational defects were found.

Platform Control Station Testing:

The Platform/Ground Select Switch was set to the platform control position. In this position, the lower or ground controls are completely electrically disabled. All control switches were activated, including the emergency stop function during each machine movement. As the controls were activated and released the machine movements would start and stop smoothly except for the boom telescope function. No other machine performance defects were found.

The telescope control function required further evaluation and testing. During the initial operational testing, it was noted that the boom would retract unintentionally when the control switch was manually released. At the time of this operational testing, the boom did not extend unintentionally after manually releasing the control switch. When the other control switches were manually released, the functions would stop. The telescope switch would stick and not return to the off position as it was designed to do according to the service manual. When the telescope switch was manually activated and released, it did not have the crisp spring-loaded return feature as exhibited by the other similar switches on the platform control panel.

Platform Control Station Switch Testing:

The boom telescope (boom extend or retract) function was controlled by an electrical switch. This control switch was a single pole, double throw, center-off, spring-loaded momentary contact toggle switch. This switch was designed to have the boom retract when pushing the switch forward and to extend when pulling the switch rearward. The switch is designed to spring return to the center or off position, breaking the continuity of the electrical circuit, when it is released. When manually released during testing, the boom telescope switch would not consistently return to the center or off position and the continuity of the circuit was not broken.

A Fluke brand multi-meter set to the audible ohmmeter position was used for this testing. The ohmmeter in this position will emit an audible buzzer sound if a circuit has continuity. The Platform/Ground Select Switch was turned to the center or off position which electrically isolates all electrical switches. The platform control panel was removed to gain access to the control wiring and switch connections. Continuity in the switch will indicate that the electrical circuit is complete which is how the switch is designed to activate the control function. The multi-meter probes were touched to the terminals of the telescope switch connections while the toggle switch was manually activated and released. The switch would intermittently exhibit continuity in both the telescope retract and extend positions after removing manual pressure from the switch. This would indicate the reason for the unintentional movement of the boom telescope function from the platform controls.

It should be noted that even though the switch would exhibit intermittent continuity in both switch positions during this continuity testing, during the physical operational testing of the machine, the boom would only retract unintentionally, but not extend unintentionally when manually releasing the switch. A similar switch located near the telescope switch was also tested for continuity in a similar manner and functioned as designed. The intermittent electrical defect in the boom telescope switch had the potential to cause the boom to extend unintentionally after the control was released. The boom telescope switch would operate properly to extend and retract the boom, however, when the switch was manually released, the switch had difficulty in returning to the center or off position in both directions.

WORK PROCEDURES/TRAINING:

During the interviews co-workers acknowledged a pre-accident awareness of operational defects associated with the boom lift. The hazard potential was either ignored or not recognized by the workers and information was not communicated to the proper officials. The employees indicated that initial training may not have fully addressed the operation of the aerial lift.

Inspection of HCC's examination records and interviews with mine personnel revealed that monthly electrical examinations had not been conducted on the aerial lift.

HUMAN FACTORS:

An autopsy was performed with urine and blood samples obtained from the victim at the Western Kentucky Regional Medical Examiner's Office. A toxicology analysis was conducted and revealed Methamphetamine intoxication. The post-mortem blood tested positive for methamphetamine 0.25 mg/L (toxic range >0.1 mg/L); no other drugs or alcohol detected. Urine toxicology tested positive for the presumptive presence of amphetamine.

ROOT CAUSE ANALYSIS

An analysis was conducted to identify the most basic causes of the accident that were correctable through reasonable management controls. During the analysis, root causes were identified that, if eliminated, would have either prevented the accident or mitigated its consequences.

Listed below are root causes identified during the analysis and their corresponding corrective actions implemented to prevent a recurrence of the accident:

1. *Root cause:* An effective communication policy was not in place to ensure that known safety defects would be reported and corrected.

   Corrective Action: Hopkins County Coal, LLC, East Volunteer, updated their safety program with protocol for reporting defects and/or hazards. A copy of the instructions was given to all company and contractor employees. A copy of the Safety Program was posted at the mine site. This program is included in the company's hazard training.

2. *Root cause:* An adequate procedure was not in place to assure that the JLG E300A Lift was being maintained in safe operating condition.

   Corrective Action: Hopkins County Coal, LLC, East Volunteer, updated their safety program with protocol for reporting and repairing defects and/or hazards. A copy of the Safety Program was posted at the mine site. This program is included in the company's hazard training.

3. *Root cause:* Electrical examinations were not conducted on the JLG E300A Lift.

   Corrective Action: Hopkins County Coal, LLC, East Volunteer, conducted the required examinations and recorded the results.

CONCLUSION

The Lift was not being maintained in safe operating condition and safety defects were not reported to the contractor or a mine official prior to operation. The lack of effective policies and procedures contributed to these conditions. The Lift's main telescoping switch was not operating properly in that unintentional movement of the boom telescope occurred during the operation of the lift.

Approved By:

_____ _____

Carl E. Boone II Date
District Manager

ENFORCEMENT ACTIONS

Order No. 7654235 was issued to East Volunteer on July 7, 2006, under the provisions of section 103 (k) of the Mine Act. "A fatal accident occurred, at approximately 8:05 a.m., at the preparation plant at East Volunteer, ID15-02013, when a contract miner was attempting to install a floor drain from a JLG Lift, Model E300A. The contractor was an employee of General Mine Contractors, Inc. of Henderson, Kentucky. This 103 (k) order is issued to insure the safety of all persons at this operation. It prohibits all activity at the new construction site, including the preparation plant and all equipment associated with that construction, until MSHA has determined that it is safe to resume normal activity in the areas. The mine operator shall obtain prior approval from an authorized representative for action to restore operations to the affected area."

104 (a) citation, number 6689310, citing 30 CFR, section 77.404 (a), S & S, Moderate Negligence was issued to East Volunteer stating, "The JLG Lift, Model E300A, serial number 0300055879, was not being maintained in a safe operation condition. The main telescoping switch is defective in that, whenever the switch has been engaged and then is released the boom, at times, continues to telescope either in or out. This condition contributed to the occurrence of this fatal accident."

104 (a) citation, number 6689309, citing 30 CFR, section 77.502, S & S, Low Negligence was issued to East Volunteer stating, "Electrical equipment (aerial man lifts) are not being examined and tested by a qualified person to assure safe operating conditions."

Appendix A
Persons Participating in the Investigation

Hopkins County Coal, LLC

Name	Title
William C. Adelman	General Manager
Luther D. Furgerson	Safety Director

General Mine Contracting, Inc.

Name	Title
Barry Slaton	President
Terry Greaves	Vice President

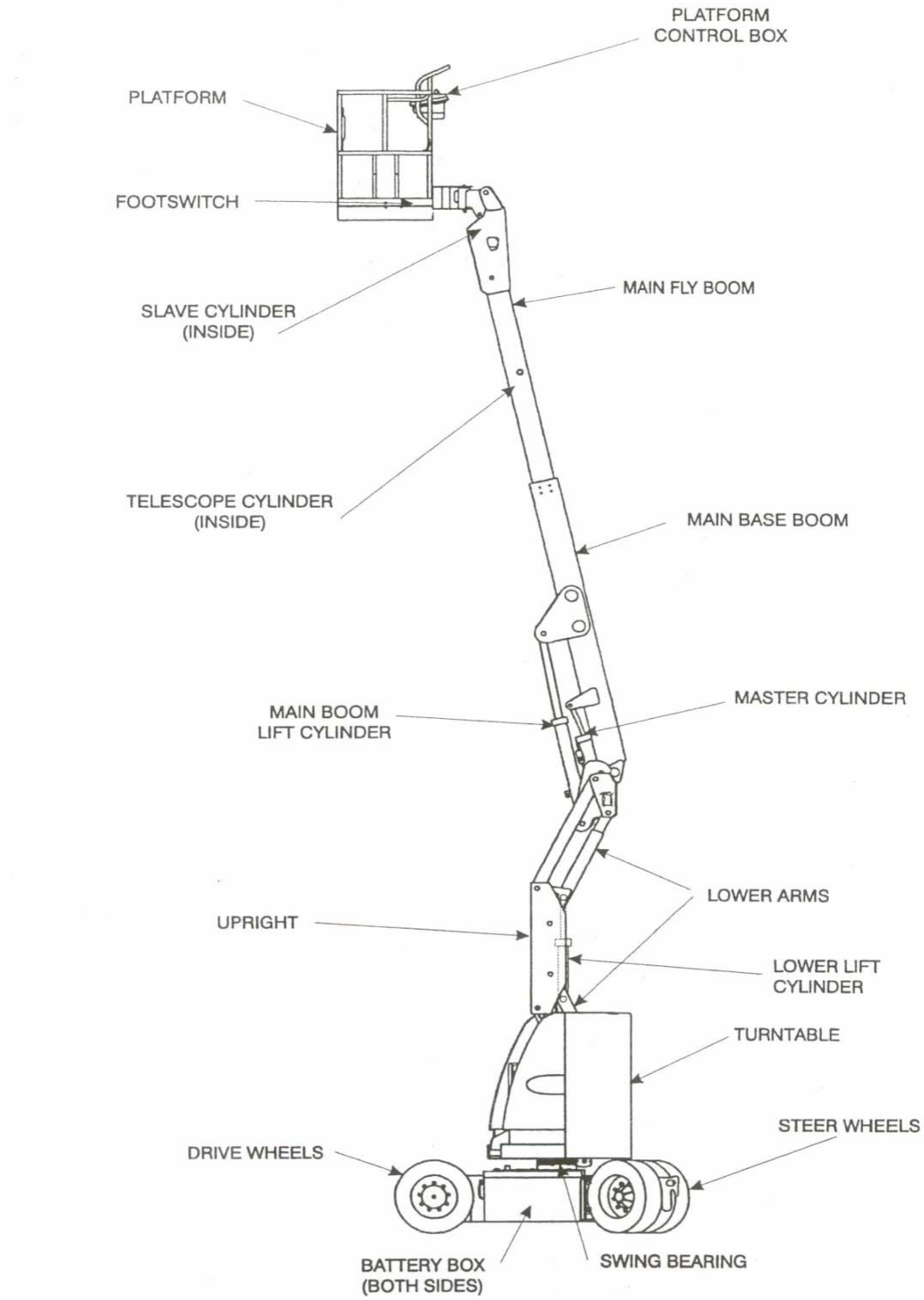
Kentucky Office of Mine Safety & Licensing

Name	Title
Greg Goins	Surface Analyst
Ronald Hughes	Director of Investigation
Joe Gill	Inspector Principle
Lewis Compton	Roof Control Specialist

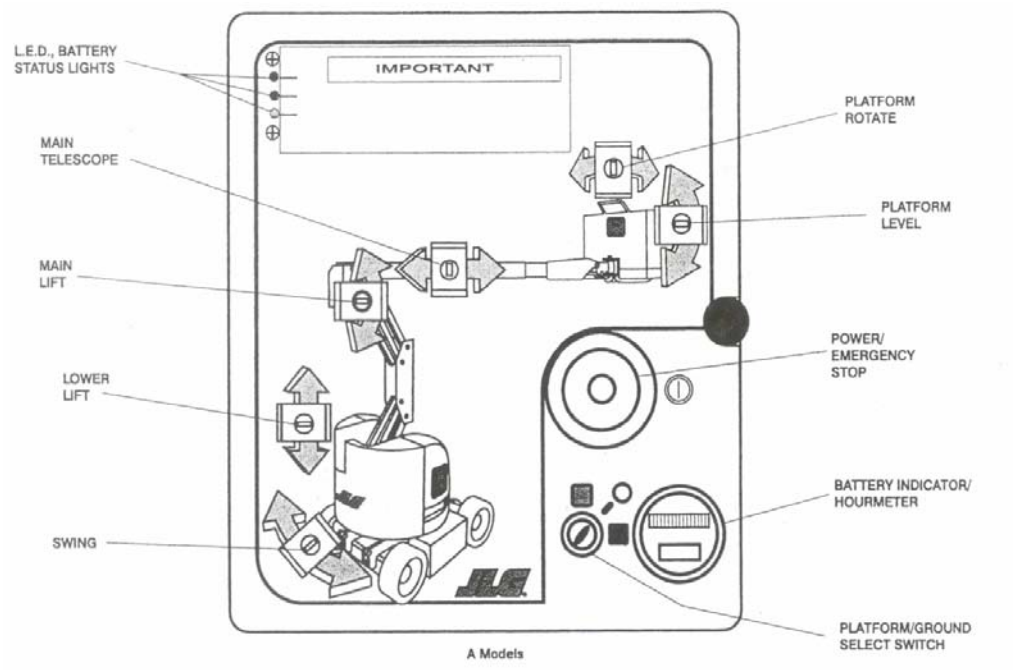
Mine Safety and Health Administration

Name	Title
Sarah A. Perry	Mining Engineer
William Williams	Training Specialist (Educational Field Services)
Phillip McCabe	Mechanical Engineer (Approval and Certification Center)
Keith Ryan	Coal Mine Safety and Health Inspector (Surface)
Rodney Adamson	Electrical Engineer
Michael V. Moore	Coal Mine Safety and Health Inspector (Electrical Specialist)
Abel Deleon	Coal Mine Safety and Health Inspector

Appendix B
Machine Components

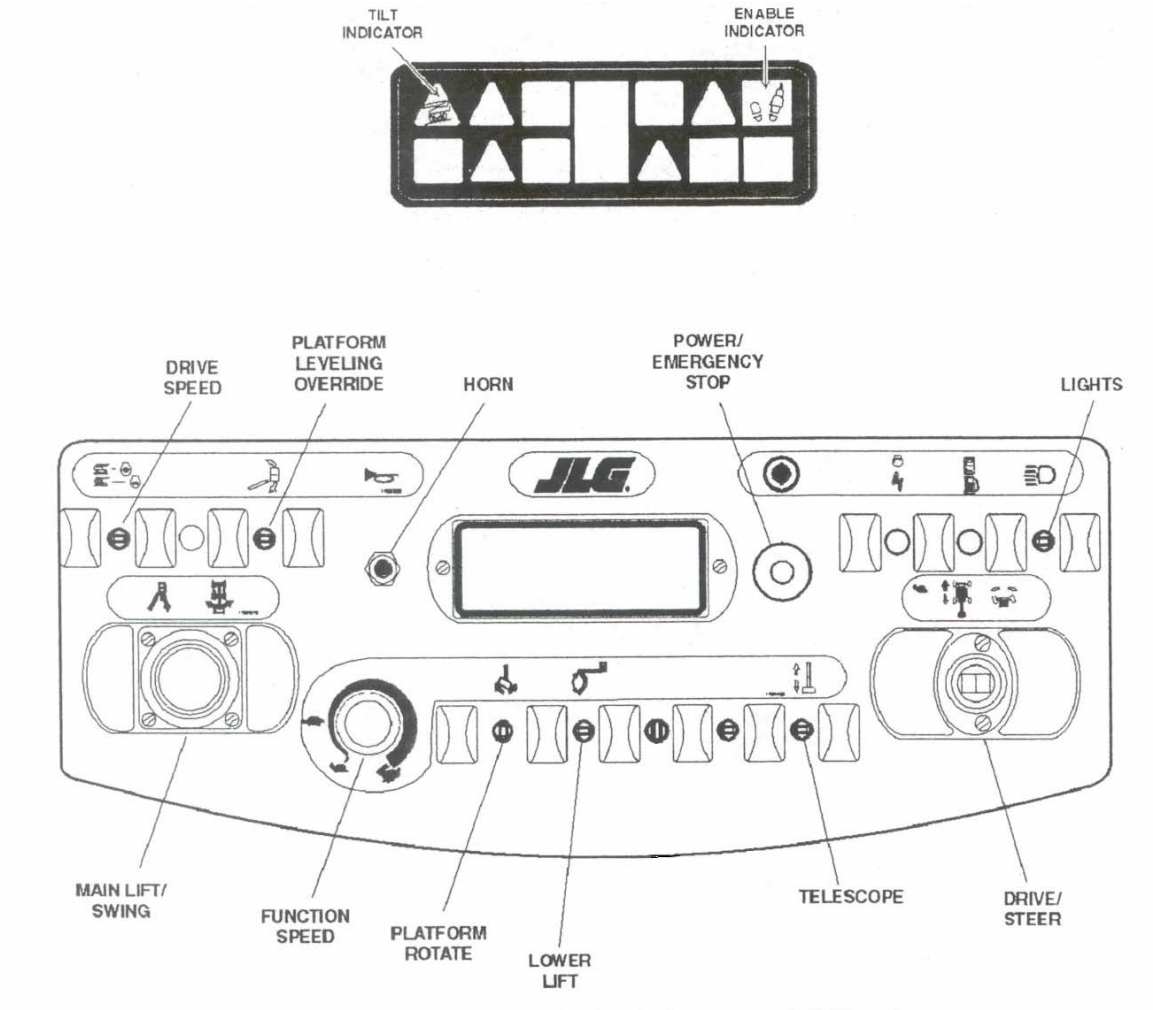


Appendix C
Ground Control Station



A Models

Appendix D
Platform Control Station



Appendix E
Photographs

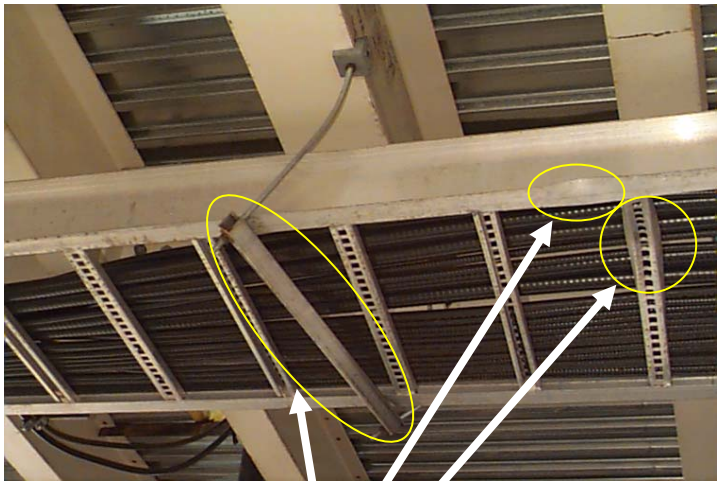
Wide Angle View of Cable Tray

Bottom of 2nd floor

4″ Floor Drain

Cable Tray

Zoomed View of Cable Tray



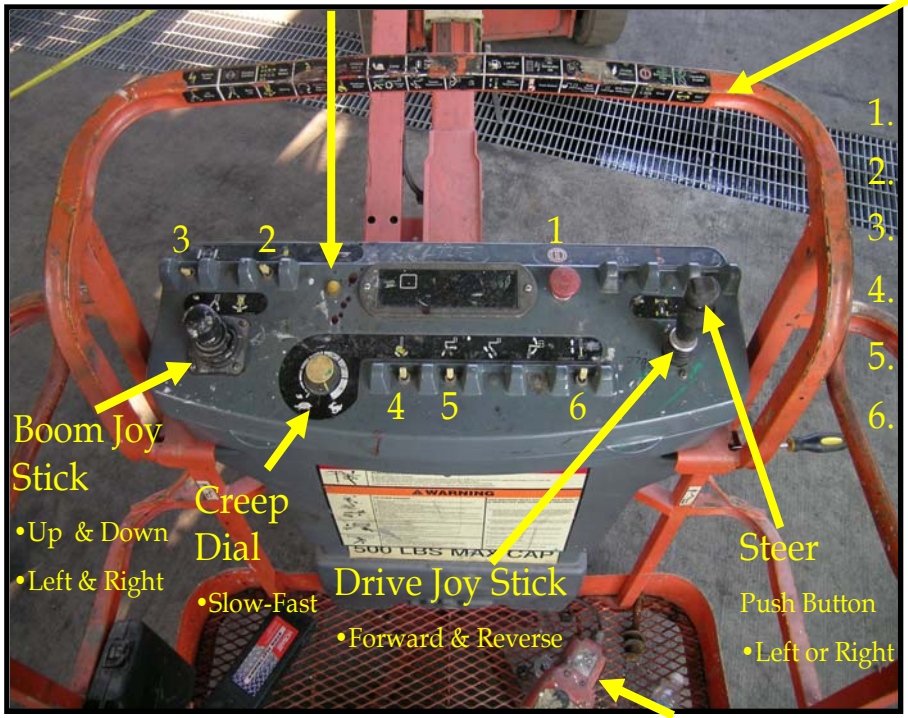
Points of Contact

Appendix F
Photographs

JLG PLATFORM CONTROL PANEL

Horn

Hand rail over the control panel



1. Emergency Stop
2. Platform Lift
3. Traction Control
4. Platform Rotate
5. Tower Telescope
6. Main Telescoping (In & Out)

Footswitch